

Investigation of subsurface faults responsible for the intraplate seismicity of Korea

Tae-Seob Kang[†]

Institute of Environmental GeoSciences, Pukyong National University
45 Yongso-ro, Nam-gu, Busan 48513, Republic of Korea
Phone) +82-51-629-6632; E-mail) tskang@pknu.ac.kr

[†]*Also affiliated with* Department of Earth and Environmental Sciences, Pukyong National University

Identification of seismogenic faults is of the topmost importance in seismic hazard assessment. However most of earthquakes occur on poorly constrained or unknown subsurface faults, which makes seismic hazard assessment difficult. Unlike earthquake-prone regions such as Taiwan and Japan, damaging earthquake has not been so frequent in Korea which is classified into the intraplate seismicity region. Establishing the relationship between the contemporary seismicity and its causative faults explicitly is a challenging issue mainly due to the long recurrence intervals between large events and the rare occurrence of surface expression from the earthquake activity in this region. Compared to the large infrequent earthquakes, microearthquakes are in a more continual process. In crustal faults, these microearthquakes appear to be distributed over the large fault plane. A dramatic case of microearthquake cluster deciphering the fault geometry is the aftershock sequence following a large earthquake. Recent dense permanent and temporary seismic monitoring networks of Korea produce plenty of information on earthquake activity of the country allowing detection of much lower magnitude events than ever. Moreover the earthquake locations can be highly constrained when combined with an appropriate relocation algorithm such as double-difference approaches. Since the mainshock-aftershock sequence is maintained, the fault geometry can be uncovered by accurately locating large number of aftershocks. The present study addresses the seismic activity and its monitoring in Korea to reveal the subsurface fault geometry in depth of which relation with the mapped faults is not known or at least unclear. A series of the precise locations of individual microearthquake in a larger fault system is a key to the characterization of seismogenic fault to be considered in the future seismic hazard assessment of the region.